

CLAIMS

What is claimed is:

1 1. A method for controlling wireless network traffic, comprising:
2 determining when a roaming mobile station initiates a registration attempt with a
3 non-preferred network; and
4 causing the roaming mobile station to initiate a registration attempt with a
5 preferred network.

1 2. The method of claim 1, further comprising determining what network the
2 mobile station is currently registered with.

1 3. The method of claim 1, further comprising preventing the mobile station
2 from succeeding in the registration attempt with the non-preferred network.

1 4. The method of claim 1, wherein the registration attempt with the non-
2 preferred network is completed, the method further comprising:
3 determining that the mobile station is registered with a non-preferred network;
4 and
5 periodically causing the mobile station to reinitiate a registration attempt with a
6 preferred network.

1 5. The method of claim 1, further comprising:
2 determining whether the mobile station should be moved to another network; and
3 updating files on the mobile station, including a preferred provider list.

1 6. The method of claim 1, further comprising:
2 determining whether the registration attempt with a non-preferred network is
3 allowed to succeed;
4 if the registration attempt is not allowed to succeed, rejecting the attempt.

1 7. The method of claim 6, wherein rejecting the attempt comprises sending a
2 recognized transaction to the mobile station that aborts the attempt.

1 8. The method of claim 6, wherein rejecting the attempt comprises causing a
2 transaction time out.

1 9. The method of claim 6, wherein rejecting the attempt comprises
2 modifying a message to restrict roaming by the mobile station.

1 10. The method of claim 1, further comprising determining whether a roaming
2 mobile station is engaged in a voice or data session.

1 11. The method of claim 1, further comprising determining whether a roaming
2 mobile station is in an automatic network selection mode or a manual network selection
3 mode.

1 12. The method of claim 1, further comprising invoking an Update Location
2 message on demand.

1 13. A method for directing a network entity to a particular network,
2 comprising:

3 detecting a roaming network entity is registering with a visited network;
4 detecting the visited network is a non-preferred network; and
5 initiating a redirection message to the network entity that causes the network
6 entity to search for a preferred network.

1 14. The method of claim 13, wherein detecting the roaming network entity is
2 registering with a visited network includes tapping a message and determining at least a
3 mobile country code (MCC) and a mobile network code (MNC).

1 15. The method of claim 14, wherein the message is an Update Location
2 message.

1 16. The method of claim 13, further comprising:
2 sending the redirection message to an over-the-air (OTA) server;
3 encrypting the message; and
4 forwarding the message to a short message service center (SMSC).

1 17. The method of claim 13, further comprising:
2 determining whether the network entity includes a Subscriber Identity Module
3 (SIM) toolkit application (STK); and
4 if the network entity includes an STK, initiating redirection with the STK.

1 18. The method of claim 13, further comprising:
2 if the network entity includes an STK, determining whether a Public Land Mobile
3 Network (PLMN) list is on the SIM; and
4 if not, forwarding a PLMN list to the SIM.

1 19. The method of claim 13, further comprising:
2 in response to the message, initiating redirection procedures; and
3 updating information on the SIM, including
4 a home PLMN search time period;
5 a PLMN selector file; and
6 a location information file.

1 20. The method of claim 13, further comprising, in response to the message,
2 issuing a RUN AT+COPS command to select a specific network.

1 21. A system for directing wireless network traffic, comprising:
2 a network operator backend, including an OTA interface; and
3 a traffic redirection network entity, wherein the traffic redirection entity
4 communicates with a mobile station to direct registration with a particular network when
5 the mobile station attempts registration with a non-preferred network.

1 22. The system of claim 21, wherein the traffic redirection network entity
2 comprises a traffic redirection node, a traffic redirection roaming probe, and a traffic
3 redirection application.

1 23. The system of claim 22, wherein, in a passive mode, the traffic redirection
2 network entity monitors a signaling link between a home network and an SS7 signaling
3 network to determine a network the mobile station is currently registered with.

1 24. The system of claim 22, wherein, in an active mode, the traffic redirection
2 node is in a signaling path 314 between a visited location register in a visited network and
3 a home location register in a home network that determines a network the mobile station
4 is currently registered with.

1 25. The system of claim 22, wherein, in an active mode, the traffic redirection
2 node is in a signaling path 314 between a visited location register in a visited network and
3 a home location register in a home network.